

# Lesson

# 4

## Introduction to Latitude and Longitude

### WHAT YOU WILL LEARN

To understand the concepts of latitude and longitude

### READING STRATEGY

Create a chart like the one below listing the importance of each of the terms in using latitude and longitude.

DEGREE	→	
EQUATOR	→	
PRIME MERIDIAN	→	

### TERMS TO KNOW

absolute location, latitude, longitude, degree, Equator, Prime Meridian

Do you know how ships measured their speed long ago? Do you know why a ship's speed is given today in knots rather than miles per hour or kilometers per hour?

Long ago, each ship carried a piece of wood fastened to a rope. The rope had knots tied in it. Each knot was a certain distance from the next. To measure the ship's speed, the piece of wood was thrown overboard. It pulled the rope out behind it. The faster the ship was going, the faster the rope went out. Someone counted how many knots passed over the side of the ship in a certain length of time. If seven knots were pulled out, the ship was said to be traveling at a speed of seven knots. Today, one knot is about 1.15 miles per hour.

Ships of long ago had to keep track of their speed on long voyages because they had no other way to tell how far they had traveled. Ships often became lost. For example, a storm might blow them far away from where they wanted to go.

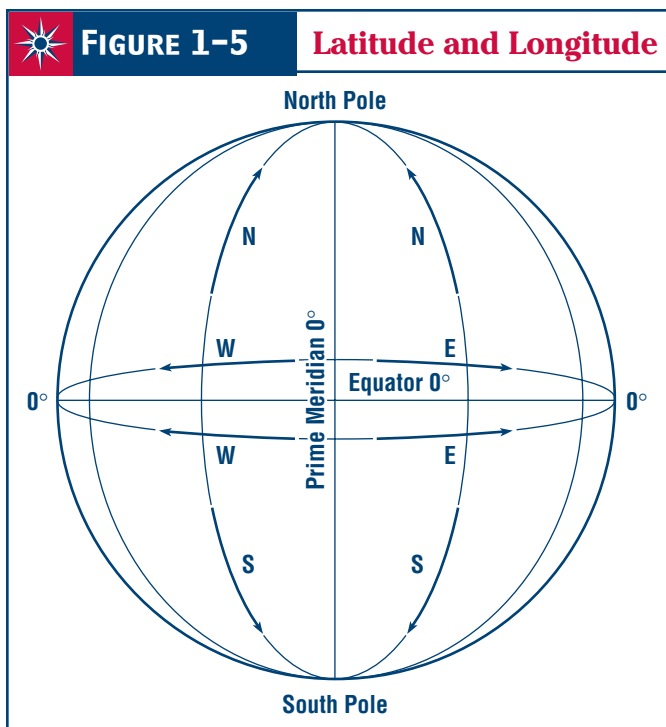
What people needed was a way to tell exactly where they were on the earth's surface—their **absolute location**. They also needed to be able to find their way to any other absolute location.

What they needed was a grid system that covered the entire earth. You know that a grid is made up of two sets of lines that cross each other. A grid system that covered the whole earth would let anyone find any location on Earth. We have such a grid today. We call it **latitude** and **longitude**.

## Using Latitude and Longitude

Latitude lines, called *parallels*, run east and west around the earth. Longitude lines, called *meridians*, run north and south. Latitude and longitude are measured in **degrees**. The shape of the earth is a sphere. It is 360 degrees around a sphere. Each degree of latitude or longitude is 1/360th of the distance around the earth. The symbol for degree is °.

The starting point for measuring degrees of latitude is the **Equator**. The Equator is a line of latitude. It divides the earth into two equal parts. The Equator runs east and west all the way around the world, halfway between the North and South Poles. **Figure 1-5** shows that the Equator is at zero degrees (0°) latitude. When we give the latitude of a place, we must state whether the place is north or south of the Equator. For example, the North



Pole is at 90° north latitude. If we said only that a place was at 90° latitude, we would not know if the place was the North Pole or the South Pole.

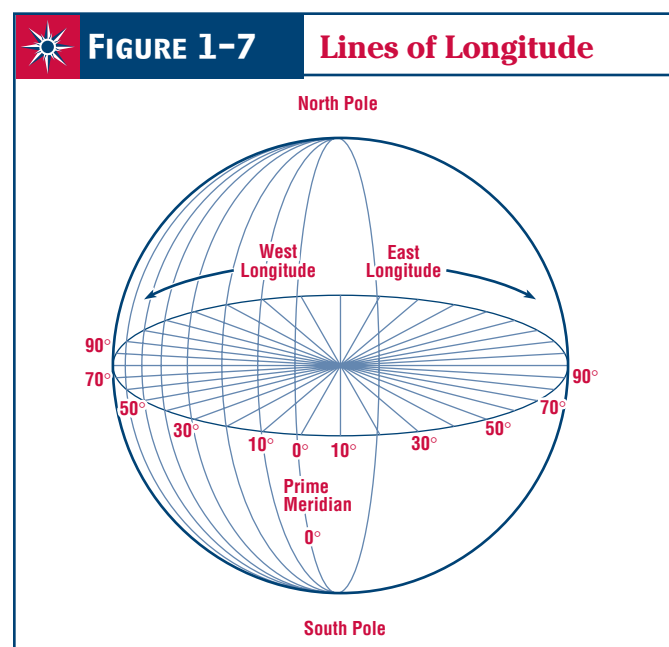
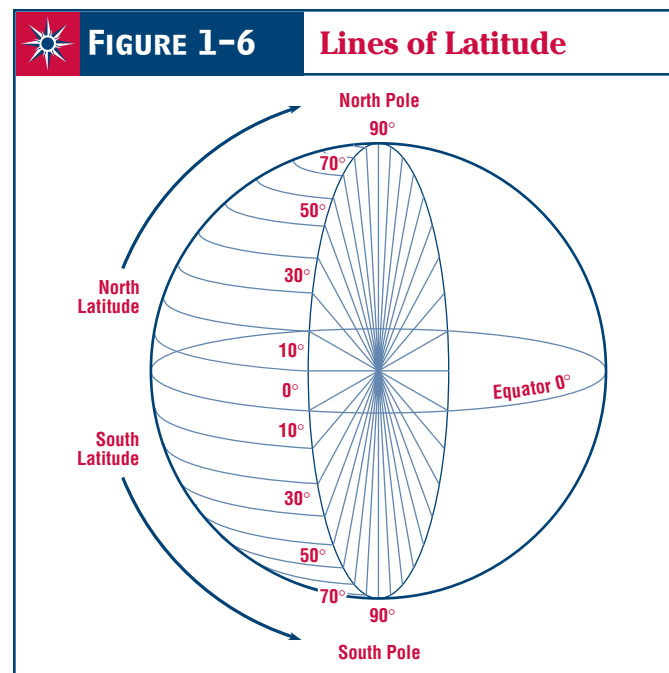
The starting point for measuring longitude is called the **Prime Meridian**. Meridian is another name for a longitude line. The earth does not have an east pole and a west pole. Therefore, some point had to be chosen as the starting point for measuring longitude. Through international agreement, Greenwich, England, was chosen as this place. All longitude is measured from the Prime Meridian that runs from the North and South Poles through Greenwich, England.

Figure 1-5 shows the Prime Meridian is at 0° longitude. When we give the longitude of a place, we must state whether the place is east or west of the Prime Meridian.

Lines of latitude run all the way around the earth, but lines of longitude do not. On the other side of the earth from the Prime Meridian is the line of longitude marked 180°. This line is the ending point for measuring longitude. The area west of the Prime Meridian and 180° is west longitude. The United States is located west of the Prime Meridian.

Latitude and longitude are determined by measuring the angle between the Equator or Prime Meridian and any point on Earth. Look at Figure 1-6 and find the Equator. Now find the line 10° north of the Equator. The angle between the Equator, the center of the earth, and this line is 10°.

Now look at Figure 1-7 and find the Prime Meridian. Now find the line 10° west of the Prime Meridian. The angle between the Prime Meridian, the center of the earth, and this line is 10°.



## Using Your Skills

### A REVIEWING KEY TERMS

Explain the meaning of each of the following terms.

1. degree

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2. latitude

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3. longitude

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4. Equator

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5. Prime Meridian

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### B PRACTICING MAP SKILLS

Follow the directions to complete **Map 1-6: The World**.

1. Find the line of latitude that is the Equator. Write Equator on the line.
2. Find the line of longitude that is the Prime Meridian. Write Prime Meridian on the line.
3. The lines of latitude and longitude shown on the map are spaced  $30^\circ$  apart. Find the first latitude line north of the Equator. Label the line  $30^\circ\text{N}$ . Find the first latitude line south of the Equator. Label the line  $30^\circ\text{S}$ . Now label the rest of the latitude lines correctly.
4. Find the first longitude line east of the Prime Meridian. Label the line  $30^\circ\text{E}$ . Find the first longitude line west of the Prime Meridian. Label the line  $30^\circ\text{W}$ . Now label the rest of the longitude lines correctly.

